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Natural Resources Conservation Service

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South Missouri Water Quality Project

2004 Annual Progress Report

A Review of Fiscal Year October 1, 2003 — September 30, 2004.

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This document is a publication of the South Missouri Water Quality Project, Natural Resources Conservation Service (NRCS) of the U.S. Department of Agriculture. NRCS works in partnership with the American people to conserve and sustain natural resources on private lands.

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Cover Photo: Althea Springs, rated as Missouri's 23rd largest spring, is located on the North Fork River in Ozark County.

Welcome Watershed Stakeholders

Photo courtesy of Jennifer Mills Earth Team Volunteer and Service Learning Student at Southwest Missouri State University, Springfield.

Steven G. Hefner, Team Leader

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This has been an exciting year for conservation in the Upper White River Basin. Local organizations that share a common interest in providing a better place to live continue to promote conservation that enhances water resources. These are local people, solving local challenges, through voluntary conservation.

Conservation solutions that involve land treatment on private land are the key to success. Planting trees to help hold stream banks in place, using nutrient management planning to stimulate healthy pastures, building fences to manage livestock grazing, and homeowners testing lawns to prevent over-fertilization are just a few examples of conservation practices applied this year in the basin.

Many landowners installed these conservation practices by partnering with local Soil and Water Conservation Districts and the Natural Resources Conservation Service. State and federal cost share dollars were provided through voluntary programs to private landowners. These funds were matched by significant personal contributions from the landowners themselves.

Assistance was not limited to those who only elected to participate in programs. Those landowners with sufficient financial resources, but only in need of technical information , can and do request the services of NRCS. Through the NRCS conservation technical assistance effort, conservation planning can also be extended to individuals not interested in program participation.

This annual report, the first compiled by the NRCS South Missouri Water Quality Project, summarizes our conservation technical assistance extended to the stakeholders of the Upper White River Basin. Our project was first proposed by a local Resource Conservation and Development council that all shared a common goal of improving the quality of life for Missouri citizens by improving water resources. Now entering our third year of public service, our staff desires to provide voluntary conservation solutions that are locally driven.

As you review the information in this report, and learn more about what other citizens are accomplishing, I hope it inspires you to become a better steward of our natural resources.

Steven G. Hefner
Team Leader, South Missouri Water Quality Project

Contents

Mission and Purpose

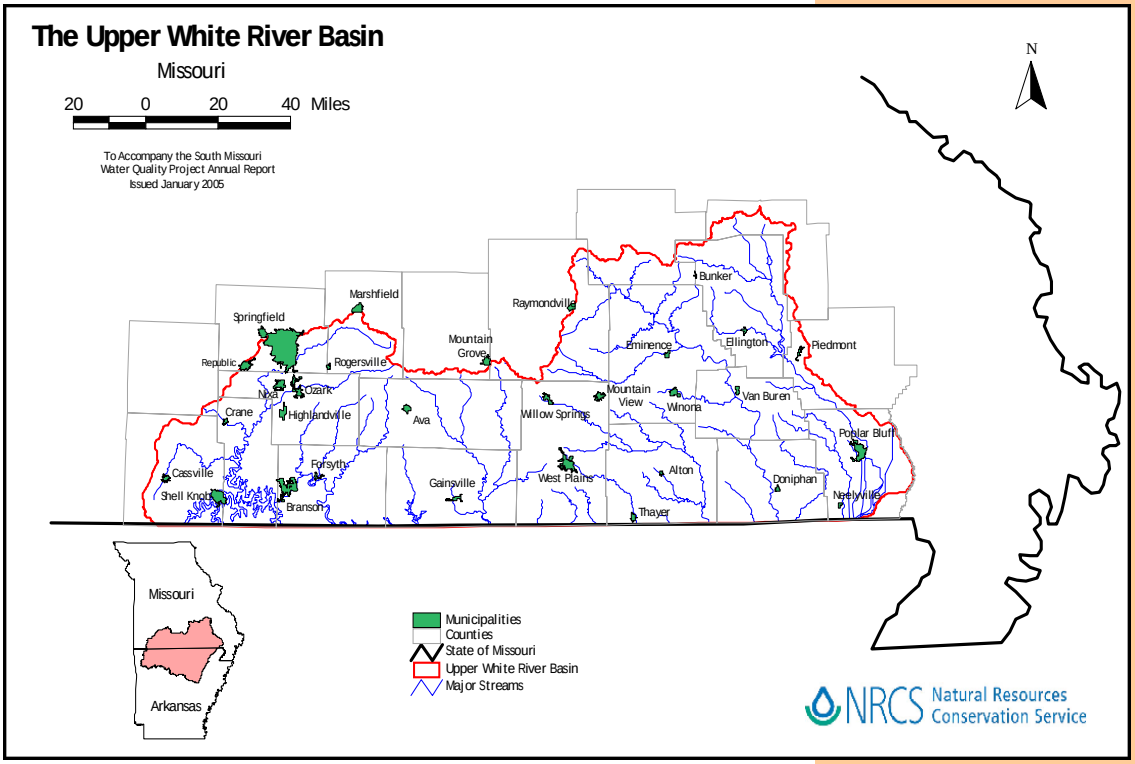
The mission of the South Missouri Water Quality Project is to provide voluntary conservation technical assistance to both rural and urban people to improve water quality in the Upper White River Basin. Input and oversight is provided by a local steering committee comprised of stakeholders with various interests in water quality. Conservation technical assistance is provided by an interdisciplinary staff of professionals to landowners, municipalities, local watershed groups, farmers, and businesses to promote stewardship of natural resources.

Project Area

The Upper White River Basin, located primarily in the U.S. Interior Highlands region, is a 6 digit hydrologic unit (#110100, U.S. Geologic Survey) in Missouri and Arkansas comprising about 14.3 million acres. Runoff from the Upper White River Basin is received by the Lower White River Basin in Arkansas and eventually empties into the Mississippi River. Locally known as "the Ozarks," this ancient land form has been subjected to erosion that has left summits where resistant rock exists and valleys where runoff found less resistance from the land.

The state line divides the Upper White River Basin roughly in half with 47% of the land mass in Missouri and 53% in Arkansas. The project area for the South Missouri Water Quality Project includes land where the basin intersects 21 Missouri counties. The majority of the project area lies in the Ozark Plateaus, with a small portion in the Mississippi Alluvial Plain. Timber and livestock production are prevalent in the Ozark Plateaus, while deep soils and artificial drainage provide excellent row crop production in the Mississippi Alluvial Plain.

Since 1935, USDA-NRCS, formerly the Soil Conservation Service, has provided technical assistance to landowners. In 1937, NRCS began planning and implementing voluntary conservation practices through soil and water conservation districts.



South Missouri Water Quality Project Area

Steering Committee

Sandy Amyx
Ozark County

Kathryn Braden
Taney County

Dwayne Cartwright
Texas County

Becky Day
Howell County

Robert Dettmer
Iron County

Charlie Erickson
Oregon County

Paul Gilgen
Shannon County

Kay Golden
Texas County

David Morrison
Ozark County

Matt Morrow
Greene County

Debbie Redford
Taney County

Scenes from the first South Missouri Water Quality Project Steering Committee Meeting which occurred on July 22, 2004 at the SMSU-West Plains campus in West Plains.

Water Quality Staff

Photo courtesy of Karla Claunch, Earth Team Volunteer and Service Learning Student at Southwest Missouri State University, Springfield.

From Left: Adam Coulter, Robert DeMoss, Mary Giles, Steve Hefner, Clay Robertson.

South Missouri Water Quality Project Staff

Adam Coulter, Urban Conservationist, works with local planning and zoning departments, public works officials, developers, and citizens within the White River Basin to facilitate urban conservation practices. Previously Adam was Development Coordinator at the Watershed Committee of the Ozarks. He currently teaches part-time at Southwest Missouri State University.

Robert DeMoss, is a Forester with expertise in tree planting, prescribed burning, and forest thinning. He can assist with restoring declining habitats such as glades and savannas, establishment/ protection of stream corridors, wildlife habitat improvement, and the decommissioning of abandoned wells. Previously he was a District Forester for an industrial timber and lumber manufacturing corporation.

Mary Giles coordinates water quality education and outreach activities by facilitating opportunities for community involvement. Her past experience includes organizational communication and administrative relations in two non-profit organizations.

Steve Hefner, Team Leader, is responsible for staff administration, nutrient management, and watershed planning. He has agronomy experience with row crops and livestock production systems. Prior work assignments include public service with USDA-NRCS in an Irrigation and Water Quality office, and agricultural research with the University of Missouri Delta Research Station.

Clay Robertson has 24 years of soil conservation public service in various locations in Missouri. As a Resource Conservationist with a background in soils and irrigation management, he is currently administering a 319 grant in cooperation with the James River Basin Partnership.

Harmony between people and the land.

NRCS National Vision Statement

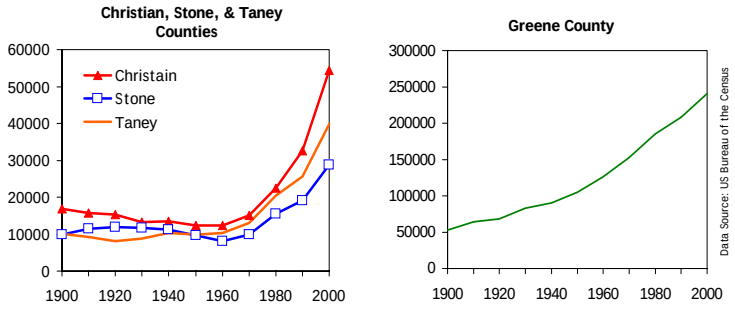
Urban Resource Planning

"Always design a thing by considering it in its next larger context, a chair in a room, a room in a house, a house in an environment, and an environment in a city plan.

Eliel Saarinen
Architect

Urban environmental issues in the Upper White River Basin are requiring more attention with each passing year. Southwest Missouri is the fastest growing region in Missouri and land use is changing from agricultural use to new housing developments. Of the 21 counties in the project area, 20 experienced positive growth over the 1990-2000 census count. Christian, Taney, Stone and Webster Counties grew over 30 percent. Studies have indicated that watershed hydrology can be greatly altered by increasing the impervious surface of a watershed by just 10 percent. Urban conservation opportunities related to non-point source pollution include prudent lawn care, erosion management from construction sites, low impact development, green space preservation, and storm water management practices.

Population growth of selected southern Missouri counties, 1990-2000.



Specific Accomplishments:

- Riparian corridor assistance to a development project in Christian and Webster Counties. The conservation plan will protect a stream where 115 homes will be constructed.
- Provided guidance in establishing an on-site water maintenance agreement for a Christian County residential development.
- Provided technical services for the City of Branson Parks and Recreation Department regarding water quantity issues impacting park facilities. Recommended conservation practices that address and alleviates both water quality and quantity concerns.
- Provided assistance to establish sediment and erosion control practices and procedures to a developer of a 60-acre Kimberling City residential development.
- Provided 15 acres of urban tree health recommendations within the Upper White River Watershed.
- Provided landscape design services. All practices are based on NRCS standards that include the planting of native vegetation, the establishment of terraces, and the remediation of critical eroded areas. Though the NRCS does not have cost-share practices for urban conservation practices, other programs through the Missouri Department of Conservation and Soil and Water Conservation Districts are recommended.

Urban Resource Planning

- Urban storm water assistance to the cities of West Plains and Poplar Bluff addressing Phase II National Pollutant Discharge Elimination System (NPDES) storm water requirements. Assistance included the researching of storm water management strategies used by other cities, storm water education programs, and watershed delineation within city limits.
- Provided recommendations and conservation plans for golf courses in West Plains and Branson. This included converting existing landscape features into conservation areas that protect water quality while enhancing the golfing experience. Such conservation practices recommended included converting rough areas along the fairways into native warm season grasses and landscaping sinkholes to challenge the golfer while enhancing the filtration.
- On-site soil and riparian resource assessment for a sanitary sewer project along a small stream located within the City of Springfield.
- Developed urban conservation plans for eight residential properties experiencing erosion and flooding problems. Recommended the establishment of rain gardens to control and alleviate water quality and quantity concerns by increasing infiltration capacity and planting native vegetation.

Photo depicts urban flooding following a rain event on November 24, 2004 in a West Plains neighborhood near the North Fork Branch of Howell Creek.

Photo courtesy of the City of West Plains

- Designed an urban nutrient management computer spreadsheet to automate design and document preparation of urban nutrient management plans. The spreadsheet was reviewed by the Natural Resources Conservation Service officials and was certified to meet Natural Resources Conservation Service standards and specifications for nutrient management planning.
- Used the computer spreadsheet to prepare 152 urban nutrient management plans for homeowners in the Upper White River Basin. These urban nutrient management plans specified the source, rate, and timing of nutrients based on soil testing results and lawn coverage area measurements. Urban nutrient management plans were delivered to stakeholders in 15 southern Missouri communities.

"Well maybe not quite the best on the block, but it's almost there. Even the two sodded yards aren't looking better than mine! I take great pride in my lawn and I truly appreciate your help this past year in getting it to where it is now."

Urban Lawn Participant Greene County

Rural Forestry Assistance

"A man does not plant a tree for himself, he plants it for posterity."

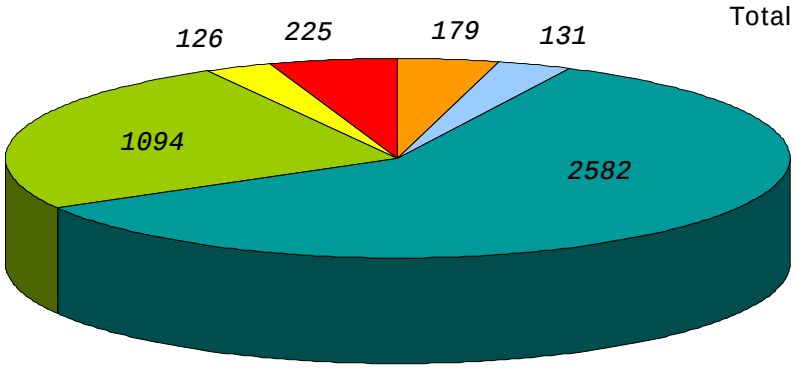
Anonymous

The value of trees in protecting watersheds can not be overstated. Forest canopies interrupt the erosive forces of precipitation as water falls from the sky. Trees in riparian areas also combat shear forces of stream flow, help stabilize banks, filter nutrients from surface waters, and clean the air.

A significant portion of the Upper White River Basin is covered by forest. Most, but not all, of the conservation technical assistance offered through this office supported landowners who were participating in congressional approved USDA voluntary programs. Practices that were implemented involved planting and managing tree buffers, thinning forest stands, and restoring savanna and glade landscapes. All were beneficial for both water quality stakeholders and individual landowners.

Stand of hardwood timber in Stone and Taney Counties in need of thinning operations.

Acres of Forestry Conservation Planning Assistance Provided by the South Missouri Water Quality Project in Fiscal Year 2004.



Total Forestland Assessed
4,337 acres

- Riparian Corridor
- Other
- Timber Stand Improvement
- Adequate
- Glade Restoration
- Prescribe Burn

COMPLETED PRACTICES IN 2004

Planted Riparian Corridor	34 acres
Enhanced Corridor Mngt.	4.5 miles
Timber Stand Improvement	95 acres
Prescribe Burn Mngt.	225 acres
Glade Restoration	126 acres
Savanna Restoration	85 acres

Rural Water Resource Protection

All life depends on water. Throughout history, civilizations have either prospered or failed because of a suitable supply or quality of water. A region's economic prosperity can be directly related to a good supply of water. In southwest Missouri, a clean and abundant water supply supports an economy dependant upon agricultural production, tourism, entertainment, and manufacturing. Karst geology is present in the Ozark Highland region. As the Ozark Mountains were uplifting, the limestone and dolomite deposits that were underneath the soil surface cracked. These small cracks began to enlarge as acidic rainfall percolated through the profile. The result was an underground landscape full of caves, sinkholes, underground rivers, and springs.

One conservation challenge for karst regions involves the vulnerability of ground water resources. Water takes the path of least resistance and in karst regions, water can travel rapidly through openings in the soil surface and through passages in rock layers beneath the earth without experiencing soil filtration. Ground waters can then flow laterally and resurface in springs. Successful dye traces have been made within the Upper White River Basin from as far as 40 miles away.

The South Missouri Water Quality Project has worked with individual landowners to apply conservation practices that provide beneficial impacts to karst water features. Some activities involved restoration projects such as abandoned well decommissioning, developing nutrient management plans, and promoting septic system maintenance. Others involved information activities to educate the public about rural water protection.

Specific Accomplishments:

- Inventoried 23 onsite septic systems for maintenance practices in the James River Basin. Fifteen of the systems inventoried completed pumping maintenance.
- Coordinated a soil fertility test to verify soil test phosphorus and potassium buildup recommendations on cool season grass with the University of Missouri. Information acquired through this project will be incorporated into local nutrient management schools for Upper White River Basin citizens.
- Developed 678 acres of nutrient management plans for rural farms in Webster, Christian, and Howell Counties.
- Inventoried and prepared well decommissioning plans for 15 abandoned wells. Eleven of the inventoried wells were decommissioned.

"When the well's dry, we know the worth of water."

Benjamin Franklin
Poor Richard's Almanac

A Well Decommissioning

Abandoned well prior to decommissioning in Webster County.

Well in process of being decommissioned according to specifications.

Well site following decommissioning.

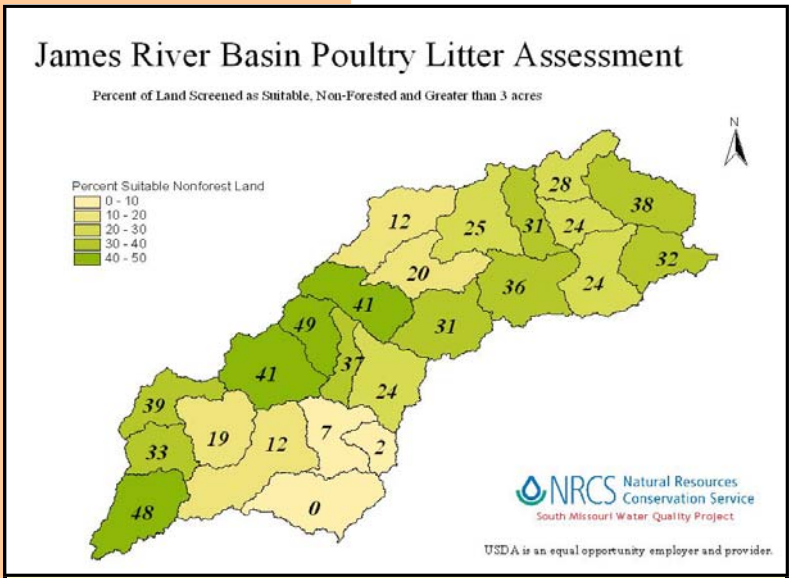
Watershed Planning

"To protect your rivers, protect your mountains."

Emperor Yu of China 1600 B.C.

Watershed planning involves working with collective land areas and groups instead of individual property owners. Planning efforts include watershed profiles and assessments. Each require collection and analysis of data, that in turn, support the decision-making phase of the planning process.

Watershed profiles represent a compilation of watershed information assembled into a concise report. Typical information would include watershed size and location by county, elevation and slope distribution, geologic and soil characteristics, land use and land cover distribution, climatic information, and stream channel distribution. Watershed assessments require integrating geographic information system data and computer analysis tools to assess a particular resource issue. Often groups that request the information plan on using the data to prepare grant applications that, if funded, bring money for voluntary conservation.



A map product summarizing a GIS assessment for the James River Basin Partnership concerning poultry litter application.

Specific Accomplishments:

- Jack's Fork Watershed profile for the Top of the Ozarks Resource Conservation and Development Council for Texas, Howell, and Shannon Counties.
- Completed a water quality assessment of Ward Branch, near Springfield using Earth Team volunteers.
- Partnered with the Taney County Soil and Water Conservation District to prepare the Beaver Creek Agricultural Non Point Source Special Area Land Treatment (AgNPS SALT) application. The district was awarded a proposal in April 2004 in the amount of $396,820 for conservation practices in the watershed.
- Provided assistance to four soil and water conservation districts in Wright, Barton, Stone and McDonald Counties for 2005 AgNPS SALT grant applications. Assistance included cartography map products, watershed profiles, and application review.
- Produced 89 cartography map products in support of watershed activities. Map products were presented to local watershed organizations, resource conservation and development councils, landowners, soil and water conservation districts, and USDA personnel for supporting web sites, grant milestones, and public meetings.

Professional Training

One of the functions of the South Missouri Water Quality Project is to educate and train interested individuals in natural resource protection as it relates to water quality. Staff members have expertise in nutrient management, urban conservation, forestry, geography and mapping, public relations, and soils. Knowledge empowers people to create change and sound training in conservation is a priority for this office. Staff members serve as guest speakers for outreach meetings, lectures, and training sessions when the events support the mission of the office.

Specific Accomplishments:

- On the job training provided to five USDA Farm Service Agency employees, two USDA NRCS employees at the Springfield Major Land Resource Area office, one Top of the Ozarks RC&D employee, one Barry County NRCS employee, and one MU Extension employee in the field of global positioning systems and Arc View computer software.
- Provided Certified Crop Advisor Training to 60 Missouri Farmers Association employees covering watershed planning and water quality conservation protection.
- Cooperated with the MU Extension Service (and others) in providing septic tank maintenance training for realtors. Trained 138 realtors from the greater Springfield and Marshfield areas.

Adam Coulter, South Missouri Water Quality Project Urban Conservationist, serving as a guest lecturer in a Land Use Planning Class at Southwest Missouri State University, Springfield.

- Water Quality staff presented a training session to 45 USDA-NRCS planners concerning timber stand improvement. Training covered explanation of the practice, purpose, benefits, and assessment of suitable sites.
- Provided water quality training to the USDA-NRCS grassland conservationists detailing services the staff could provide to assist their conservation planning activities.
- Provided nutrient management training to three NRCS employees and one Earth Team volunteer.

Robert DeMoss, South Missouri Water Quality Project Forester, speaking about cost share programs on a Missouri Department of Conservation tour in Taney County.

"National conservation action must spring from people on the land, and to a large extent, be advanced by them as individuals, with the help of government."

Hugh Hammond Bennett

Founder of the Soil Conservation Movement

Outreach Activities

"Government of the people, by the people, for the people, shall not perish from the earth."

Abraham Lincoln
President of the United States

Mary Giles, South Missouri Water Quality Project Clerk, participating in the door-to-door distribution of the Urban Lawn Plan in Christian County.

The featured quote offers inspirational words from a leader who faced the crisis of a divided nation. When President Lincoln organized the Bureau of Agriculture in 1862, he referred to the department as the "people's department." President Lincoln understood effective government service is dependent upon an informed citizenry that is free to participate in the process, independent of class, affiliation, or heritage.

These are the principles by which we operate. The agency's civil rights policy is located on page one of this report. Our commitment to civil rights is not only rooted in policy, but an inward belief in "equal public service for all." Paramount to this effort is reaching people that are outside of normal operating circles. This report itself is an attempt to reach and inform others concerning the services we have available.

Specific Accomplishments:

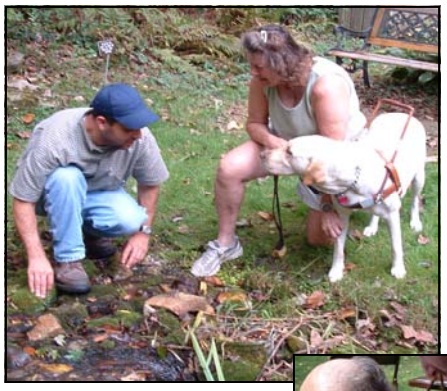
- Organized a South Missouri Water Quality Project Steering Committee. Eleven citizens representing different stakeholder interests in improved water quality of the Upper White River Basin, met in West Plains to begin providing input and counsel to this project.
- Featured in a two minute news clip aired on KYTV (Springfield) concerning urban lawn nutrient management practices. KYTV estimates the contact audience included 43,000 households and approximately 54,000 adults in nine surrounding counties. Forty requests for technical assistance were generated from the news feature.
- Developed and distributed 12,340 copies of a fact sheet and brochure to 19 southern Missouri counties. The fact sheet disclosed information about services available by the South Missouri Water Quality Project and was distributed with the assistance of soil and water conservation districts in the watershed.
- Developed an urban lawn nutrient management public service announcement in both English and Spanish. Distributed the English version to 143 households by using "door to door" contact methods. Approximately 10 nutrient management plans resulted from this outreach activity.
- Distributed 4,000 copies of the English version to the Stone County Soil and Water District for release as a newspaper insert.
- Presented the English version to a home schooling organization. Attendees were informed about Earth Team volunteer and student learning opportunities and USDA-NRCS conservation services.

Outreach Activities

- Participated in 6 field day activities that resulted in 327 contacts by making presentations about USDA conservation technical services. Those field day activities included lawn shows, watershed informational meetings, and town hall meetings.
- Conducted urban outreach to local city governments in Ava, West Plains, Branson, Poplar Bluff, and Springfield to offer storm water planning assistance.
- Reached 76 individuals through speaking engagements at Southwest Missouri State University, Hopedale Baptist Church, and the Upper White River Basin coordinator's meeting. This outreach resulted in four urban conservation planning projects.
- Made water quality conservation opportunities in photography, early childhood education, graphic arts, and nutrient management available to students at the following schools within the watershed by posting Earth Team and Service Learning opportunities on campus employment websites or by corresponding with college officials: Drury University, Southwest Missouri State University-West Plains, Three Rivers Community College, and Ozarks Technical Community College.

To the Left: *Peggy Otten, an Earth Team volunteer and Ozarks Technical Community College student, takes a soil sample in Greene County as part of the Urban Lawn Program. Peggy's participation in the USDA-NRCS Earth Team Program was a direct result of outreach activities by the South Missouri Water Quality Project staff to students in the Turf and Landscape Department at Ozarks Technical Community College in Springfield.*

Water Quality Field Day for the Blind



Above: *Discussing the aquatic insects and their relationship to water quality.*

To the right: *Experiencing the movement of a minnow*

To the Left: *Attempting to identify the vegetation in the herb garden by feeling and smelling the leaves*

Earth Team Activities

"Take care of the land and the land will take care of you…"

Hugh Hammond Bennett
Founder of the Soil Conservation Movement

Twenty-one volunteers in the South Missouri Water Quality Project contributed 572 hours of service during fiscal year 2004. Their services were utilized for 5 major projects within the project boundary, the Upper White River Watershed.

Water Quality Staff Earth Team Highlights

- **The South Missouri Water Quality Project staff received the Area 4 and Missouri "Earth Team" awards.**
- **The South Missouri Water Quality Project Clerk received the Area 4 and Missouri "NRCS Employee Most Supportive of the Earth Team Program" Awards.**

The Natural Resources Conservation Service has been providing an opportunity for volunteers to utilize their talents on behalf of conservation for over two decades through the Earth Team Program. The mission of the Earth Team Volunteer Program is to provide leadership for a volunteer workforce that conserves, protects, and sustains our natural resources.

Earth Team volunteers are an integral part of the NRCS conservation team. They provide a variety of skills and talents as they join professional conservationists in helping farmers and landowners in both rural and urban areas conserve the earth's natural resources.

Specific Accomplishments:

- Six individuals were recruited to become Earth Team volunteers and Southwest Missouri Water Quality Project Steering Committee members. They represent various water quality interests across the project area and provide input and guidance to the project.
- Students of an Environmental Assessment class at Southwest Missouri State University were recruited to evaluate the impact of urbanization on the Ward Branch Watershed. The team assessed urbanizing features and the impact upon watershed conditions. The project generated 528 Earth Team hours and the information in the 68 page report will assist the community by providing a baseline for future monitoring, assist in identifying priority areas for restoration, and provide data to local county officials to assist in future urban planning.
- One individual was recruited through the College Central Network employment website. The volunteer completed an inventory of lawn fertilizers in the greater Springfield area. This information was utilized by staff nutrient management planners. The volunteer also assisted by conducting follow-up drive-by assessments of lawns that received nutrient management recommendations.
- Earth Team volunteer opportunities were made available at several local colleges. One Service Learning student responded in the area of photography and dually enrolled as an Earth Team volunteer. The volunteer took photographs of conservation practices and compiled a library of digital photographs for staff use in future publications.
- An Earth Team volunteer translated an urban nutrient management publication from English into Spanish. Following its approval, a university Spanish professor was recruited to become an Earth Team volunteer and is coordinating the recruitment of students to develop a basic marketing plan for distribution of the announcement to the James River Basin Hispanic community.

Detailed Assignments

Two South Missouri Water Quality Project staff members were detailed to USDA-NRCS Administrative Area 5 to service Pemiscot and Dunklin Counties. The detail was in response to an increased work load from the Conservation Security Program, a pilot project in Southeast Missouri in 2004. Four weeks of staff time were reassigned as a result of the detail.

Clay Robertson, South Missouri Water Quality Project Resource Conservationist, conducting project surveying.

Specific Accomplishments:

- Completed 18 status reviews in Dunklin County and 22 status reviews in Pemiscot County, representing 1,841 acres of wetland and Highly Erodible Land (HEL) conservation compliance.
- Assisted with Conservation Security Program initial sign up, irrigation water management planning, executed database maintenance on case files, and trained one NRCS and one SWCD employee in irrigation water management in southeast Missouri.

"The more I want to get something done, the less I call it work."

Richard Bach